

9-2
Adding and Subtracting
Rational
Expressions

LCM

$$2^3 \cdot 3 = \textcircled{24}$$

of 8



and

12



Every factor to its highest power

LCM

of 6

and

4

LCM

of
 $15a^2bc^3$ $16b^5c^2$ $20a^3c^6$

$$5 \cdot 3$$

$$2^4$$

$$2^2 \cdot 5$$

$$2^4 \cdot 3 \cdot 5a^3b^5c^6 = \textcircled{240a^3b^5c^6}$$

Ex: $\frac{5a^2}{6b} + \frac{9 \times 3}{14a^2b^2}$

$\frac{5a^2}{6b} \xrightarrow{\times 7a^2b} \frac{35a^4b}{42a^2b^2}$

$\frac{9 \times 3}{14a^2b^2} \xrightarrow{\times 3} \frac{27}{42a^2b^2}$

$\frac{35a^4b + 27}{42a^2b^2}$

Ex: $\frac{x+10}{3(x-5)} - \frac{3x+15}{6(x-5)}$

$\frac{x+10}{3(x-5)} \xrightarrow{\times 2} \frac{2x+20}{6(x-5)}$

$\frac{2x+20}{6(x-5)} - \frac{3x+15}{6(x-5)} = \frac{2x+20-3x-15}{6(x-5)}$

$\frac{-x+5}{6(x-5)}$

$\frac{-x+5}{6(x-5)} = \frac{-1}{6}$

Ex: $\frac{1}{(y-4)} - \frac{1}{(y+4)}$

$\frac{y+4 - (y-4)}{(y-4)(y+4)}$

$= \frac{8}{(y-4)(y+4)}$

Do:

1. $\frac{1}{x^2+2x+1} - \frac{1}{x^2-1} = \frac{(x-1) - (x+1)}{(x+1)^2(x-1)}$

$\frac{-2}{(x+1)^2(x-1)}$

2. $\frac{1}{y^2-y-2} + \frac{1}{y^2+y} = \frac{y+y-2}{y(y-2)(y+1)}$

$\frac{2(y-1)}{y(y-2)(y+1)}$

Ex:

$$\frac{x - \frac{1}{x}}{1 - \frac{1}{x}} \cdot \frac{\cancel{(x-1)}(x+1)}{\cancel{x^2-1}} = \frac{\cancel{x} \cancel{(x-1)}}{\cancel{x} \cancel{(x-1)}} = 1$$

Red
Black

$$(x+1)$$

Ex:

$$\frac{a^{-1} - x^{-1}}{a^{-2} - x^{-2}} = \frac{\frac{1}{a} - \frac{1}{x}}{\frac{1}{a^2} - \frac{1}{x^2}} = \frac{\frac{x-a}{ax}}{\frac{x^2-a^2}{a^2x^2}} = \frac{x-a}{ax} \cdot \frac{a^2x^2}{x^2-a^2} = \frac{ax}{x+a}$$

Do:

$$\frac{1 - hk^{-1}}{h^{-1} - k^{-1}}$$

HW

p482-483

23-33odd

38-40